

CHAPTER 6

ITEM ANALYSIS

OVERVIEW

To provide evidence of the technical quality of the KIRIS assessment, a series of item level analyses were performed for each KIRIS accountability grade. The results presented in this chapter are from the actual statewide administration of questions for Accountability Cycle 3, the years 1995 through 1998. The following summarizes the six types of analyses presented for each accountability grade:

- Distribution of item scores for open-response items,
- Distribution of corrected item-total correlations for open-response items,
- Distribution of item-theta correlations for open-response items,
- Distribution of N verses A, P, D biserial correlations for open-response items,
- Distribution of N, A verses P, D biserial correlations for open-response items,
- Distribution of N, A, P verses D biserial correlations for open-response items.

To provide a comprehensive overview for each of the above analyses, distributions of results for each analysis are presented. While this leads to the presentation of an enormous amount of statistical results, it enables the reader to more thoroughly evaluate the technical qualities of KIRIS items.

GRADE 4/5 RESULTS. Tables 6-1 through 6-6 present the results for the item level analyses for grade 4 and grade 5. Table 6-1 presents the distribution of item scores for open-response items for Mathematics, Reading, Science, Social Studies, Arts and Humanities and Practical Living/Vocational Studies for each year of Accountability Cycle 3. Note that KIRIS open-response items are scored on a 0-4 scale, with 2.00 representing the midpoint of the range of difficulty. Inspection of Table 6-1 shows that for each year, most of the item difficulties fall between 1.21 and 2.80. In general, the Mathematics and Science tests across the four years were more difficult than the other four tests. This result was reflected in the greater number of Mathematics and Science item difficulties falling below 1.21. While Mathematics still had several items in 1997 and 1998 below 1.21, it also had more items than any other subject area that were above 2.41, which would indicate that while some items were difficult, others were easier.

Results with respect to the corrected item-total correlations presented in Table 6-2 are generally favorable. The corrected item-total correlations for each test, for each year, generally fall within the range of .40 to .69, with mathematics having most of the .60 to .69 correlations. It should be noted that the calculation of the corrected item-total

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correlations for the common items in Mathematics, Reading, Science, and Social Studies was slightly different than for the matrix items. The strategy for obtaining values for the common items was to calculate the corrected item-total correlations for both the common and matrix items by form, and then take the average corrected item-total correlation for each common item across all forms. Using this strategy, each item (both common and matrix) contributed a single value to the distribution of item-total correlations for each content area and year. (Of course, the item score was removed from the corresponding total before the corrected item-total correlation was calculated for an item.)

Because all Arts and Humanities and Practical Living/Vocational Studies items were matrix items, the correlations presented for these items actually represents the correlation of one matrix item with another (there being only two matrix items per form for each of these tests). As such, the correlations for Arts and Humanities and Practical Living/Vocational Studies are slightly lower than for the other four tests, values generally ranging from .30 to .49, although there was improvement during the last two years of the cycle with several in the .50 to .59 range. Unlike the results presented in Table 6-2, the item-theta correlations presented in Table 6-3 take advantage of the Item Response Theory (IRT) scale constructed for a content area for a particular year. Because theta is the IRT ability estimate computed for each student based on his or her pattern of responses to questions in a given content area, the correlations presented in Table 6-3 are not corrected. Inspection of Table 6-3 reveals that the correlations are generally higher than the corrected raw score item-total correlations, most item-theta correlations falling within the range of .60 to .79.

To determine the degree of item *discrimination* relative to different student performance levels (i.e., Novice, Apprentice, Proficient, and Distinguished; or NAPD), biserial correlations were obtained between item scores (i.e., 0-4 scale) and dichotomized performance levels so as to assess the relationship between item scores and the assignment of students to a specific performance category. The biserial correlation can be interpreted as an estimate of the product-moment correlation that would have been obtained had the dichotomized performance levels been a normally distributed continuous measure. With respect to the biserial correlations, inspection of Tables 6-4 through 6-6 shows that most items differentiated between Novice and non-Novice students reasonably well and between Apprentice or below and Proficient or above students reasonably well; the biserial correlations in both cases generally fall between .60 and .79, with some scores in Mathematics and Reading in the .80 to .89 range during the last two years of the cycle. While the biserial correlations for the distinction between Distinguished and non-Distinguished students (Table 6-6) were generally not as high as for the previous two comparisons, they do suggest that most items generally differentiated between Distinguished and non-Distinguished reasonably well. The biserial correlations generally fall between .50 and .79. Note that for some forms of the test, no students achieved a performance level of Distinguished. For these forms, no biserial correlation could be calculated.

GRADES 7/8 AND 11/12 RESULTS. Tables 6-7 through 6-18 present the results for the item level analyses for grades 7/8 and 11/12. Because the results for these KIRIS accountability grades were generally similar to those of grades 4/5, details of the results as presented above are not outlined here. However, several observations with regard to item scores are noteworthy. First, inspection of Tables 6-7 and 6-13 show the grades 7/8 and 11/12 items to be generally more difficult than for grades 4/5, with more items across all content areas and years falling below 1.21, although there is some migration upward during the last two years of the cycle. Similar to grades 4/5, the Mathematics and Science tests across the four years were generally more difficult than the other four tests. However, unlike grades 4/5, Mathematics for grades 7/8 and 11/12 appeared to have more difficult items than the Science test, with more item means falling below .81 (on a scale from 0-4), especially for grade 11 for the first two years of Accountability Cycle 3.

TABLE 6-1
DISTRIBUTION OF ITEM SCORES FOR OPEN-RESPONSE ITEMS, GRADE 4¹

Subject Area	Year	Item Scores										N Items
		.00- .40	.41- .80	.81- 1.20	1.21- 1.60	1.61- 2.00	2.01- 2.40	2.41- 2.80	2.81- 3.20	3.21- 3.60	3.61- 4.00	
Mathematics	1995	0	0	3	10	12	4	0	0	0	0	29
	1996	0	0	3	15	8	3	0	0	0	0	29
	1997 ²	0	0	2	8	6	7	5	0	0	0	28
	1998 ²	0	0	1	7	9	7	4	0	0	0	28
Reading	1995	0	0	1	3	13	10	2	0	0	0	29
	1996	0	0	0	2	17	9	1	0	0	0	29
	1997	0	0	0	0	14	14	0	0	0	0	28
	1998	0	0	0	0	23	5	0	0	0	0	28
Science	1995	0	0	1	12	11	5	0	0	0	0	29
	1996	0	0	5	10	12	2	0	0	0	0	29
	1997	0	0	3	7	14	4	0	0	0	0	28
	1998	0	0	5	6	13	4	0	0	0	0	28
Social Studies	1995	0	0	0	6	17	6	0	0	0	0	29
	1996	0	0	0	9	19	1	0	0	0	0	29
	1997 ²	0	0	2	10	13	3	0	0	0	0	28
	1998 ²	1	0	0	11	13	3	0	0	0	0	28
Arts and Humanities	1995	0	0	2	5	3	2	0	0	0	0	12
	1996	0	0	0	13	7	3	1	0	0	0	24
	1997 ²	0	0	0	1	10	11	2	0	0	0	24
	1998 ²	0	0	0	0	5	17	1	1	0	0	24
Practical Living	1995	0	0	2	3	7	0	0	0	0	0	12
	1996	0	0	1	7	15	1	0	0	0	0	24
	1997 ²	0	0	0	0	8	15	1	0	0	0	24
	1998 ²	0	0	0	2	11	11	0	0	0	0	24

¹ Does not include scores of excluded students or scores of students who left entire test form blank. If only a portion of a test form was left blank, the blank portion was converted to zeroes.

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TABLE 6-2
DISTRIBUTION OF CORRECTED ITEM-TOTAL CORRELATIONS FOR
OPEN-RESPONSE ITEMS, GRADE 4¹

Subject Area	Year	Correlation										N Items
		.00-.09	.10-.19	.20-.29	.30-.39	.40-.49	.50-.59	.60-.69	.70-.79	.80-.89	.90-1.00	
Mathematics	1995	0	0	0	0	4	14	11	0	0	0	29
	1996	0	0	0	0	4	19	6	0	0	0	29
	1997 ²	0	0	0	0	6	20	2	0	0	0	28
	1998 ²	0	0	0	0	0	17	11	0	0	0	28
Reading	1995	0	0	0	0	2	24	3	0	0	0	29
	1996	0	0	0	0	1	24	4	0	0	0	29
	1997	0	0	0	0	3	23	2	0	0	0	28
	1998	0	0	0	0	0	19	9	0	0	0	28
Science	1995	0	0	0	1	15	13	0	0	0	0	29
	1996	0	0	0	3	21	5	0	0	0	0	29
	1997	0	0	0	3	20	5	0	0	0	0	28
	1998	0	0	0	2	22	4	0	0	0	0	28
Social Studies	1995	0	0	0	0	4	18	7	0	0	0	29
	1996	0	0	0	0	10	16	3	0	0	0	29
	1997 ²	0	0	0	0	12	16	0	0	0	0	28
	1998 ²	0	0	0	0	8	20	0	0	0	0	28
Arts and Humanities ¹	1995	0	0	0	4	2	0	0	0	0	0	6
	1996	0	0	0	5	7	0	0	0	0	0	12
	1997	0	0	0	2	8	2	0	0	0	0	12
	1998	0	0	0	2	8	2	0	0	0	0	12
Practical Living ¹	1995	0	0	0	4	2	0	0	0	0	0	6
	1996	0	0	1	2	9	0	0	0	0	0	12
	1997	0	0	1	2	6	3	0	0	0	0	12
	1998	0	0	1	6	4	1	0	0	0	0	12

¹ Note only one correlation per form is presented for arts and humanities and practical living/vocational studies, (the corrected item total correlation is between two items appearing on the same form).

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TABLE 6-3
DISTRIBUTION OF ITEM-THETA CORRELATIONS FOR
OPEN-RESPONSE ITEMS, GRADE 4¹

Subject Area	Year	Correlation										N Items
		.00- .09	.10- .19	.20- .29	.30- .39	.40- .49	.50- .59	.60- .69	.70- .79	.80- .89	.90- 1.00	
Mathematics	1995	0	0	0	0	1	3	10	15	0	0	29
	1996	0	0	0	0	0	4	13	12	0	0	29
	1997 ²	0	0	0	0	0	2	9	15	2	0	28
	1998 ²	0	0	0	0	0	0	12	16	0	0	28
Reading	1995	0	0	0	0	2	0	14	13	0	0	29
	1996	0	0	0	0	0	0	9	19	1	0	29
	1997	0	0	0	0	0	4	14	10	0	0	28
	1998	0	0	0	0	0	0	12	16	0	0	28
Science	1995	0	0	0	0	0	5	16	8	0	0	29
	1996	0	0	0	0	2	7	19	1	0	0	29
	1997	0	0	0	0	1	13	11	3	0	0	28
	1998	0	0	0	0	0	6	16	6	0	0	28
Social Studies	1995	0	0	0	0	0	3	13	13	0	0	29
	1996	0	0	0	0	0	11	13	5	0	0	29
	1997 ²	0	0	0	0	0	7	13	8	0	0	28
	1998 ²	0	0	0	0	0	6	14	8	0	0	28

¹ Does not include scores of excluded students or scores of students who left entire test form blank. If only a portion of a test form was left blank, the blank portion was converted to zeroes.

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TABLE 6-4
NOVICE VS. APPRENTICE, PROFICIENT, AND DISTINGUISHED
DISTRIBUTION OF BISERIAL CORRELATIONS
FOR OPEN-RESPONSE ITEMS, GRADE 4¹

Subject Area	Year	Biserial Correlation										N Items
		.00- .09	.10- .19	.20- .29	.30- .39	.40- .49	.50- .59	.60- .69	.70- .79	.80- .89	.90- 1.00	
Mathematics	1995	0	0	0	0	0	5	10	13	1	0	29
	1996	0	0	0	0	0	6	11	7	5	0	29
	1997 ²	0	0	0	0	0	3	8	10	7	0	28
	1998 ²	0	0	0	0	0	1	9	12	6	0	28
Reading	1995	0	0	0	1	0	1	7	16	4	0	29
	1996	0	0	0	0	1	1	6	15	6	0	29
	1997	0	0	0	0	0	3	6	12	7	0	28
	1998	0	0	0	0	0	0	6	15	7	0	28
Science	1995	0	0	0	0	0	7	12	10	0	0	29
	1996	0	0	0	0	2	8	18	1	0	0	29
	1997	0	0	0	0	1	10	10	7	0	0	28
	1998	0	0	0	0	1	8	13	6	0	0	28
Social Studies	1995	0	0	0	0	0	3	13	13	0	0	29
	1996	0	0	0	0	1	10	11	5	2	0	29
	1997 ²	0	0	0	0	0	8	15	5	0	0	28
	1998 ²	0	0	0	0	0	5	16	7	0	0	28

¹ Does not include scores of excluded students or scores of students who left entire test form blank. If only a portion of a test form was left blank, the blank portion was converted to zeroes.

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TABLE 6-5 NOVICE, APPRENTICE, VS. PROFICIENT AND DISTINGUISHED DISTRIBUTION OF BISERIAL CORRELATIONS FOR OPEN-RESPONSE ITEMS, GRADE 4¹												
Subject Area	Year	Biserial Correlation										N Items
		.00- .09	.10- .19	.20- .29	.30- .39	.40- .49	.50- .59	.60- .69	.70- .79	.80- .89	.90- 1.00	
Mathematics	1995	0	0	0	0	1	2	9	10	6	1	29
	1996	0	0	0	0	1	3	10	13	2	0	29
	1997 ²	0	0	0	0	1	4	8	4	10	1	28
	1998 ²	0	0	0	0	1	4	5	13	5	0	28
Reading	1995	0	0	0	0	1	1	18	9	0	0	29
	1996	0	0	0	0	0	1	12	14	2	0	29
	1997	0	0	0	0	0	4	16	8	0	0	28
	1998	0	0	0	0	0	0	16	11	1	0	28
Science	1995	0	0	0	0	0	6	14	8	1	0	29
	1996	0	0	0	0	2	9	13	5	0	0	29
	1997	0	0	0	0	4	12	7	5	0	0	28
	1998	0	0	0	0	1	6	11	9	1	0	28
Social Studies	1995	0	0	0	0	0	3	16	9	1	0	29
	1996	0	0	0	0	3	12	9	5	0	0	29
	1997 ²	0	0	0	0	1	6	12	9	0	0	28
	1998 ²	0	0	0	0	0	4	14	8	2	0	28

¹ Does not include scores of excluded students or scores of students who left entire test form blank. If only a portion of a test form was left blank, the blank portion was converted to zeroes.

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TABLE 6-6 NOVICE, APPRENTICE, AND PROFICIENT VS. DISTINGUISHED DISTRIBUTION OF BISERIAL CORRELATIONS FOR OPEN-RESPONSE ITEMS, GRADE 4¹												
Subject Area	Year	Biserial Correlation										N Items
		.00-.09	.10-.19	.20-.29	.30-.39	.40-.49	.50-.59	.60-.69	.70-.79	.80-.89	.90-1.00	
Mathematics	1995	0	0	0	0	1	4	7	14	1	2	29
	1996	0	0	0	0	2	4	10	11	2	0	29
	1997 ²	0	0	0	0	1	7	6	6	7	1	28
	1998 ²	0	0	0	0	2	4	12	9	1	0	28
Reading	1995	0	0	0	1	3	9	13	3	1	0	29
	1996	0	0	0	0	1	5	14	7	2	0	29
	1997	0	0	0	0	2	5	14	6	1	0	28
	1998	0	0	0	0	0	0	14	12	2	0	28
Science	1995	0	0	0	0	1	10	6	8	4	0	29
	1996	0	1	0	2	3	8	5	7	2	1	29
	1997	0	1	3	2	3	5	7	7	0	0	28
	1998	0	0	0	0	3	6	9	9	1	0	28
Social Studies	1995	0	0	0	0	0	5	14	7	3	0	29
	1996	0	0	0	0	2	13	10	4	0	0	29
	1997 ²	0	0	0	0	2	7	11	7	1	0	28
	1998 ²	0	0	0	0	1	2	14	6	4	1	28

¹ Note that for some forms of the test, no students achieved a performance level of Distinguished. For these forms, no biserial correlation could be calculated.

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TABLE 6-7
DISTRIBUTION OF ITEM SCORES FOR OPEN-RESPONSE ITEMS, GRADE 8¹

Subject Area	Year	Item Scores										N Items
		.00- .40	.41- .80	.81- 1.20	1.21- 1.60	1.61- 2.00	2.01- 2.40	2.41- 2.80	2.81- 3.20	3.21- 3.60	3.61- 4.00	
Mathematics	1995	0	4	12	10	2	2	0	0	0	0	30
	1996	0	0	13	8	8	1	0	0	0	0	30
	1997	0	0	6	10	6	4	2	0	0	0	28
	1998	0	0	4	12	9	2	1	0	0	0	28
Reading	1995	0	0	0	2	19	9	0	0	0	0	30
	1996	0	0	1	4	14	10	1	0	0	0	30
	1997 ²	0	0	0	1	22	5	0	0	0	0	28
	1998 ²	0	0	0	0	26	2	0	0	0	0	28
Science	1995	1	2	9	13	5	0	0	0	0	0	30
	1996	0	3	9	14	4	0	0	0	0	0	30
	1997 ²	0	0	7	9	9	3	0	0	0	0	28
	1998 ²	7	0	0	7	11	3	0	0	0	0	28
Social Studies	1995	0	0	3	17	10	0	0	0	0	0	30
	1996	0	0	6	19	5	0	0	0	0	0	30
	1997	0	0	4	18	6	0	0	0	0	0	28
	1998	0	0	4	16	7	1	0	0	0	0	28
Arts and Humanities	1995	0	1	0	8	3	0	0	0	0	0	12
	1996	0	0	0	19	5	0	0	0	0	0	24
	1997	0	0	0	2	19	3	0	0	0	0	24
	1998	0	0	0	0	13	11	0	0	0	0	24
Practical Living	1995	0	0	1	3	7	1	0	0	0	0	12
	1996	0	0	0	5	17	2	0	0	0	0	24
	1997	0	0	0	1	12	9	2	0	0	0	24
	1998	0	0	0	4	12	7	1	0	0	0	24

¹ Note that for some forms of the test, no students achieved a performance level of Distinguished. For these forms, no biserial correlation could be calculated.

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TABLE 6-8
DISTRIBUTION OF CORRECTED ITEM-TOTAL CORRELATIONS FOR
OPEN-RESPONSE ITEMS, GRADE 8¹

Subject Area	Year	Correlation										N Items
		.00-.09	.10-.19	.20-.29	.30-.39	.40-.49	.50-.59	.60-.69	.70-.79	.80-.89	.90-1.00	
Mathematics	1995	0	0	0	0	2	20	8	0	0	0	30
	1996	0	0	0	0	3	19	8	0	0	0	30
	1997	0	0	0	0	2	14	12	0	0	0	28
	1998	0	0	0	0	1	19	8	0	0	0	28
Reading	1995	0	0	0	0	2	15	13	0	0	0	30
	1996	0	0	0	0	2	21	7	0	0	0	30
	1997 ²	0	0	0	0	0	11	17	0	0	0	28
	1998 ²	0	0	0	0	0	4	23	1	0	0	28
Science	1995	0	0	0	2	12	16	0	0	0	0	30
	1996	0	0	0	2	16	12	0	0	0	0	30
	1997 ²	0	0	0	1	13	13	1	0	0	0	28
	1998 ²	0	0	0	0	5	21	2	0	0	0	28
Social Studies	1995	0	0	0	0	1	7	21	1	0	0	30
	1996	0	0	0	0	0	14	16	0	0	0	30
	1997	0	0	0	0	1	9	18	0	0	0	28
	1998	0	0	0	0	1	8	19	0	0	0	28
Arts and Humanities ¹	1995	0	0	0	1	5	0	0	0	0	0	6
	1996	0	0	0	1	8	3	0	0	0	0	12
	1997	0	0	0	0	2	8	2	0	0	0	12
	1998	0	0	0	0	0	10	2	0	0	0	12
Practical Living ¹	1995	0	0	0	1	5	0	0	0	0	0	6
	1996	0	0	0	0	8	4	0	0	0	0	12
	1997	0	0	0	0	3	8	1	0	0	0	12
	1998	0	0	0	0	2	8	2	0	0	0	12

¹Note: only one correlation per form is presented for arts and humanities and practical living/vocational studies, (the corrected item-total correlation is between two items appearing on the same form).

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TABLE 6-9
DISTRIBUTION OF ITEM-THETA CORRELATIONS FOR
OPEN-RESPONSE ITEMS, GRADE 8

Subject Area	Year	Correlation										N Items
		.00- .09	.10- .19	.20- .29	.30- .39	.40- .49	.50- .59	.60- .69	.70- .79	.80- .89	.90- 1.00	
Mathematics	1995	0	0	0	0	0	2	19	9	0	0	30
	1996	0	0	0	0	0	5	15	10	0	0	30
	1997	0	0	0	0	0	0	10	17	1	0	28
	1998	0	0	0	0	0	0	5	22	1	0	28
Reading	1995	0	0	0	0	1	1	10	17	1	0	30
	1996	0	0	0	0	0	3	19	8	0	0	30
	1997 ²	0	0	0	0	0	3	8	16	1	0	28
	1998 ²	0	0	0	0	0	5	22	1	0	0	28
Science	1995	0	0	0	1	2	6	18	3	0	0	30
	1996	0	0	0	0	2	12	13	3	0	0	30
	1997 ²	0	0	0	0	1	11	12	3	1	0	28
	1998 ²	0	0	0	0	0	8	14	6	0	0	28
Social Studies	1995	0	0	0	0	1	0	10	16	3	0	30
	1996	0	0	0	0	0	1	13	16	0	0	30
	1997	0	0	0	0	0	3	13	10	2	0	28
	1998	0	0	0	0	0	3	13	9	3	0	28

¹ Does not include scores of excluded students or scores of students who left entire test form blank. If only a portion of a test form was left blank, the blank portion was converted to zeroes.

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TABLE 6-10
NOVICE VS. APPRENTICE, PROFICIENT, DISTINGUISHED
DISTRIBUTION OF BISERIAL CORRELATIONS FOR
OPEN-RESPONSE ITEMS, GRADE 8¹

Subject Area	Year	Biserial Correlation										N Items
		.00- .09	.10- .19	.20- .29	.30- .39	.40- .49	.50- .59	.60- .69	.70- .79	.80- .89	.90- 1.00	
Mathematics	1995	0	0	0	0	2	7	13	8	0	0	30
	1996	0	0	0	0	3	8	8	11	0	0	30
	1997	0	0	0	0	1	5	7	11	4	0	28
	1998	0	0	0	0	1	0	6	20	1	0	28
Reading	1995	0	0	0	0	1	4	9	11	5	0	30
	1996	0	0	0	0	0	5	12	12	1	0	30
	1997 ²	0	0	0	0	0	1	10	12	5	0	28
	1998 ²	0	0	0	0	0	0	4	19	5	0	28
Science	1995	0	0	0	1	3	6	13	7	0	0	30
	1996	0	0	0	0	4	7	14	5	0	0	30
	1997 ²	0	0	0	0	1	7	12	7	1	0	28
	1998 ²	0	0	0	0	0	5	12	10	1	0	28
Social Studies	1995	0	0	0	0	1	0	11	15	3	0	30
	1996	0	0	0	0	0	1	13	16	0	0	30
	1997	0	0	0	0	1	4	10	13	0	0	28
	1998	0	0	0	0	0	3	11	12	2	0	28

¹ Note: only one correlation per form is presented for arts and humanities and practical living/vocational studies, (the corrected item-total correlation is between two items appearing on the same form).

² Grade 7

TABLE 6-11
NOVICE, APPRENTICE VS. PROFICIENT, DISTINGUISHED
DISTRIBUTION OF BISERIAL CORRELATIONS FOR
OPEN-RESPONSE ITEMS, GRADE 8¹

Subject Area	Year	Biserial Correlation										N Items
		.00- .09	.10- .19	.20- .29	.30- .39	.40- .49	.50- .59	.60- .69	.70- .79	.80- .89	.90- 1.00	
Mathematics	1995	0	0	0	0	0	2	7	14	7	0	30
	1996	0	0	0	0	0	1	9	15	5	0	30
	1997	0	0	0	0	0	0	6	12	7	3	28
	1998	0	0	0	0	0	0	4	11	9	4	28
Reading	1995	0	0	0	0	1	1	10	15	3	0	30
	1996	0	0	0	0	0	3	18	9	0	0	30
	1997 ²	0	0	0	0	0	2	8	17	1	0	28
	1998 ²	0	0	0	0	0	1	4	16	7	0	28
Science	1995	0	0	0	0	2	1	12	11	2	2	30
	1996	0	0	0	0	2	8	12	3	4	1	30
	1997 ²	0	0	0	1	4	11	7	4	0	0	28
	1998 ²	0	0	0	0	3	6	7	10	1	1	28
Social Studies	1995	0	0	0	0	1	0	8	18	3	0	30
	1996	0	0	0	0	0	1	10	18	1	0	30
	1997	0	0	0	0	0	1	8	15	3	1	28
	1998	0	0	0	0	0	1	11	10	5	1	28

¹ Note: only one correlation per form is presented for arts and humanities and practical living/vocational studies, (the corrected item-total correlation is between two items appearing on the same form).

² Grade 7

TABLE 6-12
NOVICE, APPRENTICE, PROFICIENT VS. DISTINGUISHED
DISTRIBUTION OF BISERIAL CORRELATIONS FOR
OPEN-RESPONSE ITEMS, GRADE 8¹

Subject Area	Year	Biserial Correlation											N Items
		-.09-- .00	.00- .09	.10- .19	.20- .29	.30- .39	.40- .49	.50- .59	.60- .69	.70- .79	.80- .89	.90- 1.00	
Mathematics	1995	0	0	0	0	0	0	0	5	13	8	4	30
	1996	0	0	0	0	0	0	1	7	9	13	0	30
	1997	0	0	0	0	0	0	1	3	8	11	5	28
	1998	0	0	0	0	0	0	2	3	7	11	5	28
Reading	1995	0	0	0	0	0	1	2	10	13	3	1	30
	1996	0	0	0	0	0	2	7	6	9	2	0	26
	1997 ²	0	0	0	0	0	0	4	12	11	1	0	28
	1998 ²	0	0	0	0	0	0	0	10	14	4	0	28
Science	1995	1	0	0	1	0	3	3	3	7	3	3	24
	1996	0	0	0	0	0	5	1	0	0	0	2	8
	1997 ²	0	0	0	0	0	0	3	1	2	0	0	6
	1998 ²	0	0	0	0	0	1	5	10	1	1	0	18
Social Studies	1995	0	0	0	0	0	0	1	4	12	13	0	30
	1996	0	0	0	0	0	0	2	6	17	4	1	30
	1997	0	0	0	0	0	0	1	10	9	6	2	28
	1998	0	0	0	0	0	0	4	8	11	4	1	28

¹ Note that for some forms of the test, no students achieved a performance level of Distinguished. For these forms, no biserial correlation could be calculated.

² Grade 7

TABLE 6-13 DISTRIBUTION OF ITEM SCORES FOR OPEN-RESPONSE ITEMS, GRADE 11												
Subject Area	Year	Item Scores										N Items
		.00- .40	.41- .80	.81- 1.20	1.21- 1.60	1.61- 2.00	2.01- 2.40	2.41- 2.80	2.81- 3.20	3.21- 3.60	3.61- 4.00	
Mathematics	1995	1	9	4	9	5	2	0	0	0	0	30
	1996	1	6	11	5	7	0	0	0	0	0	30
	1997	0	5	13	6	2	2	0	0	0	0	28
	1998	0	4	15	4	4	1	0	0	0	0	28
Reading	1995	0	0	0	7	18	5	0	0	0	0	30
	1996	0	1	11	17	1	0	0	0	0	0	30
	1997	0	0	0	0	9	14	5	0	0	0	28
	1998	0	0	0	0	9	14	5	0	0	0	28
Science	1995	0	1	6	14	8	1	0	0	0	0	30
	1996	0	0	8	16	5	1	0	0	0	0	30
	1997	0	0	7	10	8	3	0	0	0	0	28
	1998	0	0	7	8	9	4	0	0	0	0	28
Social Studies	1995	0	0	8	11	9	2	0	0	0	0	30
	1996	0	1	11	12	5	1	0	0	0	0	30
	1997	0	1	5	9	11	2	0	0	0	0	28
	1998	0	0	0	7	17	3	1	0	0	0	28
Arts and Humanities	1995	0	1	4	7	0	0	0	0	0	0	12
	1996	0	0	3	16	5	0	0	0	0	0	24
	1997	0	0	3	19	2	0	0	0	0	0	24
	1998	0	0	0	8	12	4	0	0	0	0	24
Practical Living/Voc Studies	1995	0	0	2	3	7	0	0	0	0	0	12
	1996	0	0	2	6	16	0	0	0	0	0	24
	1997	0	0	1	2	11	10	0	0	0	0	24
	1998	0	0	0	1	12	11	0	0	0	0	24

TABLE 6-14
DISTRIBUTION OF CORRECTED ITEM-TOTAL CORRELATIONS FOR
OPEN-RESPONSE ITEMS, GRADE 11¹

Subject Area	Year	Correlation										N Items
		.00-.09	.10-.19	.20-.29	.30-.39	.40-.49	.50-.59	.60-.69	.70-.79	.80-.89	.90-1.00	
Mathematics	1995	0	0	0	1	2	11	15	1	0	0	30
	1996	0	0	0	0	1	15	14	0	0	0	30
	1997	0	0	0	0	0	11	17	0	0	0	28
	1998	0	0	0	0	0	5	18	5	0	0	28
Reading	1995	0	0	0	0	1	15	14	0	0	0	30
	1996	0	0	0	0	1	19	10	0	0	0	30
	1997	0	0	0	0	0	1	27	0	0	0	28
	1998	0	0	0	0	0	1	25	2	0	0	28
Science	1995	0	0	0	1	7	14	8	0	0	0	30
	1996	0	0	0	0	6	23	1	0	0	0	30
	1997	0	0	0	1	0	21	6	0	0	0	28
	1998	0	0	0	1	0	22	5	0	0	0	28
Social Studies	1995	0	0	0	0	0	11	18	1	0	0	30
	1996	0	0	0	0	2	15	13	0	0	0	30
	1997	0	0	0	0	0	2	24	2	0	0	28
	1998	0	0	0	0	0	1	18	9	0	0	28
Arts and Humanities ¹	1995	0	0	0	1	2	3	0	0	0	0	6
	1996	0	0	2	2	5	3	0	0	0	0	12
	1997	0	0	0	1	4	7	0	0	0	0	12
	1998	0	0	0	0	0	9	3	0	0	0	12
Practical Living/Voc Studies ¹	1995	0	0	0	0	2	4	0	0	0	0	6
	1996	0	0	1	1	4	6	0	0	0	0	12
	1997	0	0	1	1	3	7	0	0	0	0	12
	1998	0	0	0	1	0	4	7	0	0	0	12

¹ Note: only one correlation per form is presented for arts & humanities and practical living/vocational studies, (the corrected item-total correlation is between two items appearing on the same form).

TABLE 6-15
DISTRIBUTION OF ITEM-THETA CORRELATIONS FOR
OPEN-RESPONSE ITEMS, GRADE 11

Subject Area	Year	Correlation										N Items
		.00- .09	.10- .19	.20- .29	.30- .39	.40- .49	.50- .59	.60- .69	.70- .79	.80- .89	.90- 1.00	
Mathematics	1995	0	0	0	1	1	4	14	9	1	0	30
	1996	0	0	0	0	0	2	16	12	0	0	30
	1997	0	0	0	0	0	0	6	19	3	0	28
	1998	0	0	0	0	0	0	7	18	3	0	28
Reading	1995	0	0	0	0	0	4	9	17	0	0	30
	1996	0	0	0	0	0	1	15	12	2	0	30
	1997	0	0	0	0	0	0	1	25	2	0	28
	1998	0	0	0	0	0	0	3	23	2	0	28
Science	1995	0	0	0	0	4	5	9	12	0	0	30
	1996	0	0	0	0	0	3	17	10	0	0	30
	1997	0	0	0	0	1	0	11	14	2	0	28
	1998	0	0	0	0	1	1	18	8	0	0	28
Social Studies	1995	0	0	0	0	0	1	13	16	0	0	30
	1996	0	0	0	0	0	2	11	17	0	0	30
	1997	0	0	0	0	0	0	2	21	5	0	28
	1998	0	0	0	0	0	1	7	16	4	0	28

TABLE 6-16
NOVICE VS. APPRENTICE, PROFICIENT, DISTINGUISHED
DISTRIBUTION OF BISERIAL CORRELATIONS FOR
OPEN-RESPONSE ITEMS, GRADE 11

Subject Area	Year	Biserial Correlation										N Items
		.00- .09	.10- .19	.20- .29	.30- .39	.40- .49	.50- .59	.60- .69	.70- .79	.80- .89	.90- 1.00	
Mathematics	1995	0	0	0	0	0	5	9	15	1	0	30
	1996	0	0	0	1	3	8	15	3	0	0	30
	1997	0	0	0	0	2	5	12	6	2	1	28
	1998	0	0	0	0	0	5	11	11	1	0	28
Reading	1995	0	0	0	2	4	6	13	4	1	0	30
	1996	0	0	0	0	0	4	18	6	2	0	30
	1997	0	0	0	0	0	0	1	12	14	1	28
	1998	0	0	0	0	0	0	3	12	13	0	28
Science	1995	0	0	0	0	5	7	11	7	0	0	30
	1996	0	0	0	0	3	13	11	3	0	0	30
	1997	0	0	0	0	2	5	6	10	5	0	28
	1998	0	0	0	0	3	7	6	7	5	0	22
Social Studies	1995	0	0	0	0	0	5	10	15	0	0	30
	1996	0	0	0	0	0	5	12	13	0	0	30
	1997	0	0	0	0	0	1	4	14	9	0	28
	1998	0	0	0	0	0	1	3	12	11	1	28

TABLE 6-17
NOVICE, APPRENTICE VS. PROFICIENT, DISTINGUISHED
DISTRIBUTION OF BISERIAL CORRELATIONS FOR
OPEN-RESPONSE ITEMS, GRADE 11

Subject Area	Year	Biserial Correlation										N Items
		.00- .09	.10- .19	.20- .29	.30- .39	.40- .49	.50- .59	.60- .69	.70- .79	.80- .89	.90- 1.00	
Mathematics	1995	0	0	0	1	0	1	5	14	7	2	30
	1996	0	0	0	0	0	0	7	11	9	3	30
	1997	0	0	0	0	0	0	2	11	9	6	28
	1998	0	0	0	0	0	1	4	6	10	7	28
Reading	1995	0	0	0	0	0	3	6	12	9	0	30
	1996	0	0	0	0	0	1	9	15	5	0	30
	1997	0	0	0	0	0	0	1	19	8	0	28
	1998	0	0	0	0	0	0	3	20	5	0	28
Science	1995	0	0	0	0	2	7	5	14	2	0	30
	1996	0	0	0	0	0	4	9	12	5	0	30
	1997	0	0	0	0	0	1	5	16	5	1	28
	1998	0	0	0	0	0	6	9	11	2	0	28
Social Studies	1995	0	0	0	0	0	1	8	13	8	0	30
	1996	0	0	0	0	0	2	6	17	5	0	30
	1997	0	0	0	0	0	1	0	16	11	0	28
	1998	0	0	0	0	0	1	4	19	4	0	28

TABLE 6-18
NOVICE, APPRENTICE, PROFICIENT VS. DISTINGUISHED
DISTRIBUTION OF BISERIAL CORRELATIONS FOR
OPEN-RESPONSE ITEMS, GRADE 11

Subject Area	Year	Biserial Correlation										N Items
		.00- .09	.10- .19	.20- .29	.30- .39	.40- .49	.50- .59	.60- .69	.70- .79	.80- .89	.90- 1.00	
Mathematics	1995	0	0	0	1	0	1	3	8	8	9	30
	1996	0	0	0	0	0	2	5	6	6	11	30
	1997	0	0	0	0	0	0	3	3	8	14	28
	1998	0	0	0	0	0	2	4	4	5	13	28
Reading	1995	0	0	0	0	1	5	9	9	4	2	30
	1996	0	0	0	0	0	8	8	8	4	2	30
	1997	0	0	0	0	0	4	9	9	6	0	28
	1998	0	0	0	0	0	5	16	6	1	0	28
Science	1995	0	0	0	0	1	7	5	13	4	0	30
	1996	0	0	0	0	0	2	15	9	4	0	30
	1997	0	0	0	0	0	2	7	12	4	3	28
	1998	0	0	0	0	4	3	9	11	1	0	28
Social Studies	1995	0	0	0	0	0	3	3	7	10	7	30
	1996	0	0	0	0	0	2	3	11	11	3	30
	1997	0	0	0	0	0	1	1	8	15	3	28
	1998	0	0	0	0	0	0	13	13	2	0	28

These tables indicate several general trends during Accountability Cycle 3. Clearly, the spread of item difficulty was greater during the last two years of the cycle compared to the first two years. This means that more low performing students can be engaged in the test in at least some level if the questions are at a difficulty level that allows them to respond. A second noticeable trend is that the reliability scores are rising slightly during the course of the cycle. That, also, is a positive development.

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